

REMARKS

This amendment is submitted in response to the non-final Office Action of December 27, 2005, in which pending claims 1-3 and 7-26 are rejected, and in which claims 22-26 are subject to a restriction requirement. Applicant has elected to pursue claims 1-3 and 7-21 and to cancel claims 22-26 without prejudice.

Claims 1-3 and 7-21 are rejected under 5 USC § 103(a) as being unpatentable over the prior art of *Rawnick et al.* (U.S. 2003/0214437). Applicant respectfully notes that the serial number of *Rawnick* on page 4 of the Office Action is incorrect.

The present independent claims are now amended without prejudice, in order to expedite allowance. The amendments introduce no new matter, and are fully supported by page 14, lines 4-5 of the present disclosure, which describes the partial overlap feature. Applicant respectfully submits that the present amendments render independent claim 1 allowable, and likewise for the other independent claims.

Amended independent claim 17 is a best-mode claim similar to claim 1, further introducing the presence of a second radiation structure on the first PWB, wherein the first and the second radiation structure are tuned to different frequency ranges, and stating that the second PWB acts as a parasitic antenna element.

Amended independent claim 18 relates to a method for generating a radiation pattern of an antenna structure with features according to amended claim 1.

Amended independent claim 19 relates to a computer program with instructions operable to cause a processor to control a radiation of an antenna structure with features according to amended claim 1.

Amended independent claim 20 relates to a radio system with a base station and a mobile station, wherein the mobile station comprises an antenna structure with features according to amended claim 1.

Comparison of the Present Invention to the *Rawnick* Reference

In the antenna structure of the present application, as shown in FIG. 1, two radiation structures 2-1 and 2-2 are formed in a PWB 2 that is attached to an antenna carrier 1 and then covered by a decorative label 4. Electrical contact to the radiation structures 2-1 and 2-2 through the antenna carrier 1 is accomplished by the conductive pogo pins 3-3 ... 3-7, which

connect to the noses 2-3 ... 2-7 formed by the PWB 2. Radiation structure 2-1 is described to be suited for use in the frequency range of mobile radio systems such as, for instance, the GSM or UMTS (page 3, lines 17-20), whereas radiation structure 2-2 is described to be suited for use in the frequency range of GPS (page 3, lines 24-27).

On pages 1-4 of the *Rawnick* specification, an antenna structure is described with reference to Fig. 1. *Rawnick* discloses a dual-polarized, stub-tuned, proximity-fed, stacked patch antenna including a ground plane layer 14 and a dielectric substrate 12 overlying the ground plane layer 14, wherein an active patch antenna element 10 is disposed on the dielectric substrate 12 as can be seen from Fig. 1. Further, a parasitic patch antenna element 20, having a radius larger than that of the active patch antenna element 10, is spaced apart from active patch antenna element 10 (*Rawnick et al*, col. 3, para. 0029). As depicted on Fig. 1, both the active path antenna element 10 and the parasitic antenna element 20 are attached to the front side of the ground plane layer 14. Thus, *Rawnick et al* fails to disclose at least one second PWB being attached to said second side of said antenna carrier, since *Rawnick* does not disclose a PWB attached to the back side of the ground plane layer 14 (Fig. 1 of *Rawnick et al*).

Applicant agrees that the first four lines of amended claims 1 and 14 are disclosed by the prior art. However, *Rawnick* does not disclose the use of a second PWB according to the rest of claims 1 and 14. Amended claims 1 and 14 (and thus also the corresponding amended independent claims 16-21 and 23), are therefore novel with respect to the prior art of *Rawnick et al*.

Applicant also agrees that *Rawnick et al* discloses a second PWB acting as a parasitic antenna element (Fig. 1, parasitic element 20 of *Rawnick*), but respectfully disagrees that the second PWB (parasitic element 20, Fig. 1 of *Rawnick*) is attached to a second side of an antenna carrier, as demanded by lines 5-6 of claims 1 and 14. As can be seen from Fig. 1, *Rawnick* discloses that the active patch antenna element 10 and the parasitic antenna element 20 are both located on the same side of the antenna carrier (ground plane layer 14), contrary to lines 5-6 of claims 1 and 14.

Furthermore, *Rawnick* also fails to disclose that said first PWB is positioned on said first side of said antenna carrier and that said second PWB is positioned on said second side of said antenna carrier so that said second PWB partially overlaps said first PWB according to

the last three lines of the present amended independent claims, since *Rawnick* discloses that the parasitic antenna element **20** has larger radius compared active patch antenna element **10** (Fig. 1, para. 0029 of *Rawnick et al*) and thus the parasitic antenna element **20** completely overlaps the active patch antenna element **10**.

Amended claims 1 and 14 and thus also the corresponding amended independent claims 17-20 are thus also novel with respect to *Rawnick et al*.

Since the prior art of *Rawnick et al* does not disclose that a first PWB is positioned on a first side of said antenna carrier and that a second PWB is positioned on a second side of said antenna carrier so that said second PWB partially overlaps said first PWB according to the last three lines of amended claims 1 and 14 at all, amended claims 1-14 and the corresponding amended independent claims 17-20 can also be considered to be inventive. Compared to the parasitic antenna element **20** of *Rawnick et al*, which completely overlaps the active antenna element **10**, this solution according to feature e) offers a higher degree of freedom concerning the design of the second PWB.

In view of the foregoing remarks and amendments, it is respectfully submitted that the present application is in condition for allowance and such action is earnestly solicited.

The undersigned respectfully submits that no fee is due for filing this Amendment. The Commissioner is hereby authorized to charge to deposit account 23-0442 any fee deficiency required to submit this paper.

Respectfully submitted,



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Dated: March 20, 2006

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